



DEPARTMENT OF THE ARMY  
U.S. ARMY ARMAMENT RESEARCH, DEVELOPMENT AND ENGINEERING CENTER  
PICATINNY ARSENAL, NJ 07806-5000



REPLY TO  
ATTENTION OF

AD-A277 849



SMCAR-AEP (1mm)

24 MAR 1994

MEMORANDUM FOR Commander, Defense Technical Information Center,  
Building 5, Cameron Station, Alexandria, VA,  
22304-6145

SUBJECT: Release of Performance Oriented Packaging Compliance  
Report

1. The enclosed report (DOD POP HMTR/AYD 94-006) entitled:  
"Performance Oriented Packaging (POP) Testing of Packaging for  
Ground Emplaced Mines (i.e., M74, M75 and M79 Mines)" is hereby  
submitted to the Defense Technical Information Center for formal  
release. Notification of the formal release should be made to:

U.S. Army Armament Research, Development and Engineering  
Center, ATTN: Mr. Joseph Granuzzo (SMCAR-AEP), Picatinny  
Arsenal, N.J. 07806-5000

2. If there are any problems, questions or comments regarding this  
report, contact Mr. Joseph Granuzzo at 201-724-2156 (DSN 880-2156).

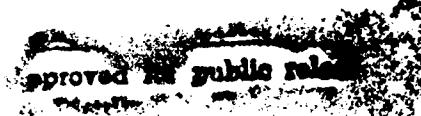
Encl  
as

*Gene Farrell*

GENE FARRELL  
Acting Chief, Packaging Division

DTIC  
ELECTED  
APR 05 1994  
S E D

94-10013



94 4 1 081

## REPORT DOCUMENTATION PAGE

Form Approved  
OMB No. 0704-0188

1a. REPORT SECURITY CLASSIFICATION <u>Unclassified</u>		1b. RESTRICTIVE MARKINGS													
2a. SECURITY CLASSIFICATION AUTHORITY		3. DISTRIBUTION / AVAILABILITY OF REPORT <u>Unlimited</u>													
2b. DECLASSIFICATION / DOWNGRADING SCHEDULE															
4. PERFORMING ORGANIZATION REPORT NUMBER(S)  DOD POP HMTR/AYD 94-006		5. MONITORING ORGANIZATION REPORT NUMBER(S)													
6a. NAME OF PERFORMING ORGANIZATION  Packaging Division, AED	6b. OFFICE SYMBOL (If applicable)  SMCAR-AEP	7a. NAME OF MONITORING ORGANIZATION													
6c. ADDRESS (City, State, and ZIP Code)  U.S. Army, ARDEC Picatinny Arsenal, NJ 07806-5000		7b. ADDRESS (City, State, and ZIP Code)													
8a. NAME OF FUNDING/SPONSORING ORGANIZATION	8b. OFFICE SYMBOL (If applicable)	9. PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER  N/A													
8c. ADDRESS (City, State, and ZIP Code)		10. SOURCE OF FUNDING NUMBERS  PROGRAM ELEMENT NO.      PROJECT NO.      TASK NO.      WORK UNIT ACCESSION NO.													
11. TITLE (Include Security Classification)  Performance Oriented Packaging (POP) Testing for Packaging of Ground Emplaced Mines (i.e., M74, M75 and M79 Mines)															
12. PERSONAL AUTHOR(S)  Joseph P. Granuzzo															
13a. TYPE OF REPORT  Final	13b. TIME COVERED  FROM _____ TO _____	14. DATE OF REPORT (Year, Month, Day)	15. PAGE COUNT  4												
16. SUPPLEMENTARY NOTATION  See attached															
17. COSATI CODES  <table border="1"><thead><tr><th>FIELD</th><th>GROUP</th><th>SUB-GROUP</th></tr></thead><tbody><tr><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td></tr></tbody></table>		FIELD	GROUP	SUB-GROUP										18. SUBJECT TERMS (Continue on reverse if necessary and identify by block number)	
FIELD	GROUP	SUB-GROUP													
19. ABSTRACT (Continue on reverse if necessary and identify by block number)  This report contains the tests performed and test results on the Ground Emplaced Mines (i.e., M74, M75 and M79 Mines) that are packed 40 mines per metal ammunition container IAW drawing number 9243805 for Performance Oriented Packaging Certification.															
20. DISTRIBUTION / AVAILABILITY OF ABSTRACT  <input type="checkbox"/> UNCLASSIFIED/UNLIMITED <input type="checkbox"/> SAME AS RPT. <input type="checkbox"/> DTIC USERS		21. ABSTRACT SECURITY CLASSIFICATION  Unclassified													
22a. NAME OF RESPONSIBLE INDIVIDUAL  STEVE RUFFINI		22b. TELEPHONE (Include Area Code)  201-724-2515	22c. OFFICE SYMBOL  SMCAR-AEP												

I. Report Number: DOD POP HMTR/AYD 94-006

II. Title: Performance Oriented Packaging (POP) Testing for  
Packaging of Ground Emplaced Mines (i.e. M74, M75 and M79 Mines)

CONTAINER DRAWING NUMBER: 9313655

Author: Joseph P. Granuzzo

Performing Activity: U.S. Army Armament Research,  
Development and Engineering Center  
(ARDEC)

Address: Department of the Army  
Commander, U.S. Army ARDEC  
Attn: SMCAR-AEP  
Picatinny Arsenal, N.J. 07806-5000

Date: February 1994

Distribution Statement A.

Approved for public release; distribution is unlimited.

Accesion For	
NTIS	CRA&I
DTIC	TAB
Unannounced <input type="checkbox"/>	
Justification .....	
By .....	
Distribution /	
Availability Codes	
Dist	Avail and / or Special
A-1	

## 1. DATA SHEET:

### a. CONTAINER

Type: Box, Ammo, Packaging: Steel; Level A Container, IAW AR-700-15 and AR-746-1.  
UN CODE: 4A1  
Part Number: Dwg.9313655: Shipping & Storage Container, Mine  
Spec Number: MIL-C-63392: Container, Shipping and Storage, Mine  
Material: Low and Intermediate tensile strength carbon steel plates of structural quality ASTM A283.  
Capacity: CU. Meter .099588 (CU. INCH 5851.0 )  
Dimensions: Outside: (length, width, height)  
CM 69.3 X 35.8 X 38.6 (INCH 27.3 X 14.1 X 15.2)  
Tare weight: Est. 25.00 kg (55 lbs) per Dwg. 9243805  
Closure: Tee bolts torqued to 16. $\pm$  2 foot pounds  
Gasket sealed

### b. PRODUCT

System: Ground Emplaced Mine Scattering System (GEMSS): Mines  
Name: M74 AP: Mines, Dwg. 9292227-1 & -2  
M75 AT: HE Mines, Dwg. 9292600  
M79 Practice Mines (Inert) Dwg. 9317994  
DODIC: M74: K151  
M75: K184  
M79: K234  
United Nations No.: UN0137  
United Nations Packaging Group: II  
Physical State: Solid

### c. PACKING AND MARKING

Dwg.9243805: Pkg & Mkg for Shipping and Storage Container, Mine for Mine, AT: HE, M75; Mine, AP: HE, M74 or Mine, AT, PRAC:M79, in Cntnr, Ammo, Plastic PA83

Amount per Container: 40 Mines in 8 Sleeves (Plastic)  
Gross Weight: M74: 89.10 kg (196 lbs)  
M79: 97.27 kg (214 lbs)  
M75: 105.45 kg (232 lbs)

Dwg.9333791: Pkg for Plastic Ammunition Container: PA-83 for Mine, AP: HE, M74 or Mine, AT, Prac: M79

## **2. BACKGROUND:**

This report contains the Performance Oriented Packaging (POP) test and test results performed IAW the applicable sections of the Code Of Federal Regulation, Title 49 Parts 100-180, dated 1 October 1992 on an outer metal container (ARDEC drawing number 9313655). A steel base and cover were T-bolted together to form a gasket sealed test piece. Due to limited availability of containers, only one fully loaded container was packed IAW ARDEC drawing 9243805 and tested. The container was loaded with 40 GEMSS M79 (inert) mines, 8 plastic sleeves and sand.

## **3. POP TEST:**

a. The POP test was conducted with a loaded container having a measured weight of 232 pounds  $\pm$  1 pound. This weight corresponds to the heaviest load that the shipping container is expected to carry. The container top and bottom halves were closed using "Tee-Bolts" torqued to  $16 \pm 2$  foot-pounds as specified per ARDEC drawing 9243805.

b. The test container was stacked tested using a weight of 2000 pounds  $\pm$  50 pounds for a time period of three twenty-four hour periods (72 hours) as required by the Code Of Federal Regulations, Title 49, paragraph 178.606. The container did not suffer any physical damage.

c. The test container was then loose cargo tested for three hours per Title 49, paragraph 178.601 "Vibration Standard". The container did not show any damage.

d. The test container was then dropped from the height of 1.2 meters (4 feet) measured to the lowest part of the suspended container. The five drops were made with the test container impacting a steel plate reinforced by concrete with the following orientations (Top, Bottom, End, Side, End Corner) IAW the Code of Federal Regulation, Title 49, paragraph 178.603. The container showed no physical damage after the drops were completed.

## **4. RESULTS:**

The container passed all tests since none of the contents were discharged. The Level A pack, along with similar container designs are considered safe for domestic and international transportation in accordance with Performance Oriented Packaging Regulations.

5. CONCLUSION:

Based upon the above POP testing, the following UN POP symbol has been applied to the GEMSS Shipping and storage container (Dwg. 9313655 when loaded with M74 and M75 mines IAW drawing 9243805:



----- NOTE 1

4A1/Y \*\* /S/\*\* ----- NOTE 2  
USA/DOD/AYD

\*\* NOTE 1 - Insert Mass Density (MD) as follows:

M74: MD = 90  
M75: MD = 106

\*\* NOTE 2 - Insert last 2 digits of year packed.